THE BUILDER,

No. XXXVI.

SATURDAY, OCTOBER 14, 1843.

ON THE PUBLIC HEALTH.

WHATEVER in the science and practice of construction bears upon the public health must be regarded as the most important parts of those subjects, and must deserve no small amount of attention in such a journal as THE BUILDER. Accordingly, under the above head, we intend to present our readers from time to time with remarks on the leading topics relating to the connection and influence of the constructive arts upon the health of the community.

In an article in our 29th Number, we pointed out the necessity for casinos in our public parks, in order to render them more attractive places of public resort, and consequently to diffuse more widely the benefits of pure air and exercise—the requisites, after wholesome food, the most indispensable to health. We propose, in the following remarks, to pursue the subject of fresh air, &c., by shewing the necessity for improvements in the ordinary method of building houses, &c., in order that the vital element may be enjoyed at home as well as in the open air of our parks and streets. Our task in this matter is rendered comparatively easy by the work which we repeatedly quoted in our article above referred to, viz. Mr. Harrison Curtis's "Simplicity of Living," from which we shall proceed to make a series of extracts, making out such observations of our own as may seem to be necessary:—

"In the construction of houses and public buildings, there is for the most part, but little care taken to provide for due ventilation, which is capable of being regulated on the strictest scientific principles.* Who has not experienced the ill effects of this neglect, in headaches, flushings, languor, and debility, incurred by attending meetings of large numbers of persons? These evils are caused by the inhalation of air from which much of the oxygen has been abstracted, and which has thus become unfit for the purposes of respiration.

"Many persons exhibit a great deal of anxiety to make their houses and rooms air-tight; stopping up every crevice with sand-bags, chimney-boards, and other devices of the same kind, with as much care as if they were endeavouring to exclude some fatal malaria. It is true that drafts are to be avoided; and I would not recommend any one to occupy a house constructed on the plan lauded in the old Irish maxim,—that a house cannot be healthy unless there is room for a bird to fly in at the windows, and for a dog to creep under the doors; yet it is scarcely less improper to prevent altogether the gradual but constant renewal of the air of our apartments.

"It is sincerely to be hoped that more attention will be paid to this subject, and that provision for perfect ventilation will not in future be overlooked by the architects either of private or public buildings. Meantime, persons of delicate health, especially those whose lungs are weak, ought to beware of frequenting numerous and crowded assemblies: the theatre, the ball-room, and other fashionable places of resort, have destroyed many a victim.

"A German writer has remarked, that persons who constantly frequent theatres never live long; and it has been noticed that members of the House of Commons who have been very attentive to their duties have seldom been long livers: there can be no doubt that the bad air of the House contributed to shorten their lives. And what can be worse than many of the modern club-houses? which, what with the number of water-closets, the smells from the cooking and lamps (often unnecessarily numerous), the crowded state of the apartments, and the "*aroma*" of the members themselves,—are any thing but wholesome. Yet few attempts are made to remedy this evil by a proper regard to ventilation. Since the publication of this work, considerable attention has been paid to the ventilation of the House of Commons, and a variety of experiments made, which, it is to be hoped, will result in the adoption of some plan that will effectually remedy the evils above alluded to.

"It is still a common practice to surround the bed with heavy close-drawn curtains, as if for the express purpose of confining the impure air around the sleepers; and as in many bed-rooms (frequently the smallest in the house) the usual channels of ventilation, such as chimneys, &c., are wanting, and the doors continue closed for several hours together, it is not surprising that the atmosphere of these rooms should become much vitiated; which is probably the chief cause of the languor and drowsiness experienced by many persons on first rising, instead of that buoyant cheerfulness which should be the result of rest and sleep.

"Care should be taken to provide for the constant admission of fresh air into sleeping apartments, which, instead of being the smallest, ought, in reason, to be the largest rooms of the house. At all events, during the day-time they ought to be perfectly ventilated. Perhaps nothing tends more to produce disease among the poorer classes of society than the practice of occupying the sleeping apartments throughout the day—a practice which must effectually prevent the complete renovation of the air, with them the more necessary on account of the confined situations of their dwellings. The custom of keeping dogs and large birds, such as parrots, in dwelling-houses, frequently causes the vitiation of the air to such an extent, as to render it exceedingly unwholesome and unpleasant.

"Oxygen is indispensable to combustion; so that the effect of fires (especially if coke or charcoal is used), candles or gas-lights, upon the air is precisely the same as that of respiration, but in a greater degree. Where they are used, therefore, attention to ventilation is still more important; express provision ought to be made to carry off directly the impure air which they so plentifully generate."

With these remarks we need hardly say that we perfectly agree, as we have more than once insisted upon the imperative necessity for improvements in the ventilation of houses, especially those inhabited by the poorer classes. Any one who has ever visited the abodes of the labouring classes in such districts as Westminster or Bethnal-green, will certainly admit that in them "the vitiation of the air exists to such an extent, as to render it exceedingly unwholesome and unpleasant," the great wonder being how it is possible to exist in such an atmosphere at all—and the sickly, pallid countenances of the unfortunate children born and bred in such localities prove painfully the noxious influence of living deprived of fresh air. To the suggestions of our author we would add one for the bestowal of greater care upon the construction of chimneys, many houses being made scarcely habitable through defects in this matter: the smoke is bad enough even when diluted to the extent it is in the open air, but when inhaled in the state of density in which it is often found in houses, it must be positively injurious.

Light and air are so intimately connected, that we may naturally pass from the latter subject to the former. The arrangements for the supply of light, especially to workshops, counting-houses, offices, &c., are sadly deficient, and allow only such a modicum to enter as is absolutely necessary to enable the various processes to be carried on, so that in the winter season artificial light has to be employed much longer than would otherwise be required, and this, as shewn in the above extract, of itself is an evil as tending to deteriorate the air. The following passage from Mr. Curtis will shew, however, that this is not the only evil arising from shutting out the light of heaven:—

"That light exercises a great and beneficial influence on the body, may be inferred from the ruddy, fresh-coloured complexions of those who live in the country, and engage in agricultural occupations, compared with the dull, sallow countenances of miners, criminals confined in dark dungeons, and other persons long secluded from the solar beams; the effect is the same in kind on those who reside in narrow, lofty streets. The complexion depends upon the condition of the blood; and it is well known that light co-operates with the oxygen to communicate to the blood its scarlet hue."

It is of no use, however, to make plenty of windows if the light be prevented from entering them by trees planted close before them, or by thick blinds kept constantly drawn down. We have often wondered how any one could voluntarily deprive himself of the most cheerful of nature's gifts, the warm sun-shine, which alone is sufficient to inspire the mind with joy and confidence, and in that way cannot but contribute largely to the preservation of health.

Here for the present we must stop, but the paramount importance of the subject will induce us soon to return to it, and to treat of its other branches; and such has of late been the awakening of attention to whatever affects the public health, that we are sure of not tiring our readers while pointing out the sanatory measures which we conceive the interests of the community demand.

* This observation is especially applicable in London, at least to the theatres, in which it frequently happens that in warm weather nearly all the windows are closed, and in cold weather open. It would be useful to have thermometers hung in various parts of the theatres for the purpose of regulating the temperature.

BEAMS TRUSSED BY TENSION.

IT is with some gratification that we advert to a series of plans which have been submitted to us of the patent tensions now offered to the public; these are for bearings of 40 feet and upwards, 30 feet and 20 feet without any intermediate support between their respective ends. The principle is that of adapting continuous wrought-iron bars for the whole lengths of beams, with mortices at regular distances of about 5 feet each, to correspond nearly with similar mortices in the beams, so arranged as that by the operation of keys or wedges the lower sides of the beams may be acted upon so as to produce as much tension as the bars will reasonably admit of, the situation of the bars being as much below the centre of the beam or neutral axis as will suffice for holding the keys.

We are aware that iron and timber so keyed up are capable of sustaining great weights between the fulcra or supports, and we believe that the adaptation of these materials, as above described, may lead the tension principle into general practice, because beams of timber are easily placed in their intended positions, either with or without the bars, which can be applied when the beams are up, and that the bars and keys can be placed and made to act upon sunken girders and other timbers in existing buildings. As to ships, the advantage of adding tension to transverse beams must be great, because a moderate depth of timber can be made available; besides, a beam so contrived will neither have the weight or be so fragile as cast-iron girders, and be nearly of double strength, especially against sudden impulses; we therefore consider that this invention will greatly benefit the marine.

The numerous employments, however, besides ship-building, in which long and strong bearings are required, induce us to allude more particularly to this invention or application of the tension principle. We observe that the points of force produced by the keys are at a moderate distance (about 5 feet) from each other, all acting in opposition from the middle of the beam, and straining the iron bar and the lower side of it, compressing it at the same time, and thus expanding the upper side into a cumbering form. We conclude that all the keys should be driven seriatim gently from the centre each way to the ends of the beam, in order to give a due tension progressively throughout the lower side.

It appears to us that the stronger in the grain the timber is, the greater the tension which can be applied; and with respect to the iron, it is evidently of great importance that it shall be of the best quality, and of a proper and sufficient degree of ductility, because if it too readily yields to the strain, its operation will be less efficacious than if acted upon according to the power of resistance which the timber may possess.

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